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| 10/672,390 | 09/26/2003 | William Voorhees | 03-0961 | 8526 |
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| LSI CORPORATION 1621 BARBER LANE MS: D-106 MILPITAS, CA 95035 | | | EXAMINER CHEA, PHILIP J | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|-------------------------------|---------------------------------|--|
| Office Action Summary | Application No. 10/672,390 | Applicant(s) VOORHEES ET AL. | |
| | Examiner Philip J. Chea | Art Unit 2153 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 14 and 16-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14, 16-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to an Amendment filed October 29, 2007. Claims 1-12,14,16-20 are currently pending. Any rejection not set forth below has been overcome by the current Amendment.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 5,16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. The term "substantially" in claims 5,16 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is not clear how much completely configuring is integrated with the steps of discovering devices, discovering ports, and configuring ports.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
5. Claims 1-12,14,16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants Admitted Prior Art (AAPA), and further in view of Aguilar et al. (US 6,199,137), herein referred to as Aguilar.

As per claim 1, AAPA discloses configuring routing attributes of ports within a SAS network domain, as claimed, comprising:

discovering devices of the SAS network domain (see page 3, paragraph 1, *describing how an SAS initiator may perform a discovery process that determines the topology of the network domain*) ;

discovering the ports of the discovered devices (see page 3, paragraph 2, *describing how an administrator must set a routing attribute associated with each port of an SAS device implying a discovery of the ports*);

configuring the routing attributes of the discovered ports (see page 3, paragraph 2, *describing how an administrator must set a routing attribute associated with each port of an SAS device implying a discovery of the ports*); and

configuring routing table information used by the devices of the domain derived from the configured routing attributes (see page 3, paragraph 2, *describing the routing attributes that configures the routing table information*).

Although the system disclosed by AAPA shows substantial features of the claimed invention (discussed above), it fails to disclose that the steps above are performed automatically.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by AAPA, as evidenced by Aguilar.

In an analogous art, Aguilar discloses the disadvantages of manually configuring IO devices because it might require a system administrator to perform a procedure that is difficult, error prone and require expensive, time consuming design and re-qualification (see column 1, lines 39-50). Aguilar discloses that it is desirable to have a device which can be adapted to provide additional bandwidth by dynamically creating a new instance of the IO controller in response to the requirements of a system without the addition of new hardware. Further showing automatically discovering devices, ports, and configuring routing attributes and routing tables (see column 4, lines 26-49, *describing the addition of a device and querying the port router to discover the topology and changing hardware registers to configure routing attributes to accommodate the newly added device*).

Given the teaching of Aguilar, a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying AAPA by employing automatic port and router

attribute configurations, such as disclosed by Aguilar, in order to avoid tedious manual configuration with the addition of new devices.

As per claim 2, AAPA further discloses that the steps of discovering devices, discovering ports, and configuring the routing attributes of the discovered ports each include a step of exchanging SMP messages (see page 3, first paragraph).

As per claim 3, AAPA further discloses configuring routing table information within initiator and expander devices of said devices of the SAS network domain wherein said routing table information is sufficient to identify paths in the SAS network domain to enable the exchange of said SMP messages (see page 3, first paragraph).

As per claim 4, AAPA further discloses completely configuring routing table information to identify all paths for exchange of messages within the SAS network domain (see page 3, second paragraph).

As per claim 5, Aguilar further discloses that that the steps of completely configuring is substantially integrated with the steps of discovering devices, discovering ports, and configuring ports (see column 4, lines 26-49).

As per claims 6,19, AAPA further discloses transmitting an SMP Discover request from a first device to a neighboring device of the first device (see page 3, first paragraph); and

receiving an SMP Discover response in said first device from said neighboring device identifying other devices coupled to ports of said neighboring device (see page 3, first paragraph, *describing the SMP Discover request to determine the topology of the SAS domain by a recursive traverse through all expander devices in the SAS domain*).

As per claim 7, AAPA further discloses transmitting an SMP Report General request from a first device to a neighboring device of the first device (see page 3, first paragraph); and

receiving an SMP Report General response in said first device from said neighboring device identifying the number of said ports within said neighboring device (see page 3, first paragraph, *describing the recursive traverse through all expander devices, implying identifying the number of said ports because all the expander devices are traversed, inherently including all the ports of the expander devices*).

As per claims 8,20, AAPA further discloses transmitting an SMP request from a first device to a second device wherein the SMP request includes vendor unique information identifying a routing attribute of said routing attributes to be configured for a port of said ports of said second device (see page 3, second paragraph , *describing the different routing attributes that can be set with each port of an SAS device through the use of the SMP requests described on page 3, first paragraph*).

As per claim 9, AAPA further discloses recursively repeating the steps of the method to traverse devices of the SAS network domain to configure said routing attributes of said ports of said devices of the SAS network domain (see page 3, first paragraph).

As per claim 10, AAPA in view of Aguilar disclose a SAS network domain, as claimed, comprising:

a plurality of expander devices providing a plurality of ports within the domain wherein each port may have an associated routing attribute (see AAPA, page 3, second paragraph); and

a domain control element coupled to at least one of the plurality of expander devices operable to configure the routing attributes of the plurality of ports (see Aguilar column 4, lines 26-49, *describing the configuration of ports (i.e. topology for routing the ports) to accommodate the addition of a new device*), wherein the domain control element is operable to configure the routing attributes of the ports by traversing port connections between the expander devices and wherein the domain control element is further operable to use the configured routing attributes to automatically generate complete routing tables used by the plurality of expander devices (see Aguilar column 4, lines 26-49, *describing how the system can query (i.e. traverse port connections) the port router and discover the default topology and then change the routing attributes by changing routing of signals between ports and controllers*).

As per claim 11, AAPA further discloses a SAS initiator device coupled to at least one of the plurality of expander devices (see page 3, first paragraph).

As per claim 12, AAPA further discloses a SAS expander device coupled to at least one of the plurality of expander devices (see page 3, first paragraph).

As per claim 14, AAPA in view of Aguilar disclose a SAS network domain comprising:

means for discovering the topology of the SAS network domain by traversing port connections between devices of the domain (see AAPA page 3, first paragraph and Aguilar column 4, lines 26-49, *describing means that could be used to perform the discovering*);

means for configuring SAS routing attributes associated with ports of devices of the domain in response to discovery of the topology of the domain (see AAPA page 3, second paragraph, and Aguilar column 4, lines 26-49, *describing means that could be used to configure routing attributes after a topology discovery*); and

means for configuring routing tables using the configured routing attributes, the routing tables used by the devices of the domain (see Aguilar column 4, lines 26-49, *describing how the system can change routing signals between ports and controllers*).

As per claim 16, Aguilar further discloses that the means are substantially integrated so as to traverse the port connection between the device of the domain only once (see column 4, lines 30-34).

As per claim 17, AAPA further discloses means for exchanging SMP messages between the devices of the domain to identify the devices, to identify the ports of the devices and to identify the port connections between the ports of the devices (see page 3, first paragraph and Aguilar column 4, lines 26-49, *describing the mans that could be used to perform the exchanging*).

As per claim 18, AAPA in view of Aguilar further discloses exchanging SMP Report General request and response messages to identify ports of the devices and to identify the port connections between the ports of the devices (see page 3, first paragraph and Aguilar column 4, lines 26-49, *describing the mans that could be used to perform the exchanging*).

Response to Arguments

6. Applicant's arguments with respect to claims 1-12,14,16-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip J. Chea whose telephone number is 571-272-3951. The examiner can normally be reached on M-F 6:30-4:00 (1st Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Burgess can be reached on 571-272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Philip J Chea
Examiner
Art Unit 2153

PJC 1/8/08


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